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ABSTRACT

The overriding reason for this analysis centers on the widespread, but varied, application of student-faculty ratios (SFR) as a contributing factor in determining the faculty budgeting requirements of public and private institutions. A survey was conducted among heads of state budget offices, heads of central administration for university systems, presidents of public liberal arts colleges, presidents of technical schools, heads of national associations, and state higher education boards to determine how they apply the concept of SFR in the management of public colleges and universities. Of particular concern at this time is the appropriateness of using the ratio data for budgeting purposes in a period of stabilized, and in the near future, declining enrollments. Accordingly, the study identifies alternatives to use of SFR in the budget process. (Author/JMF)

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SURVEY OF USE OF STUDENT-FACULTY RATIOS FOR BUDGETING PURPOSES IN HIGHER EDUCATION

Introduction and Background

At the request of the Division of the Budget's Education Examination Unit, the Organization and Management Unit conducted a survey of how other states apply the concept of student-faculty ratios in the management of public colleges and universities. To obtain an understanding of how student-faculty ratios are used and to evaluate existing alternative budgeting systems, 180 questionnaires were sent to sample various components of the higher education community which have a direct voice in university administration or which represent viewpoints on a national level. The sample included heads of state budget offices, presidents of public liberal arts colleges and universities, presidents of public technical schools, chief executives of central administrations of university systems, heads of national education associations and state boards of higher education. Medical Schools and community colleges were excluded from the study because of the special factors involved in determining their student-faculty ratios.

Among the 60 replies received, the response rate varied considerably from group to group as shown in the following table:

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TABLE I

GROUP	Number of Questionnaires Sent	Number of Replies	% Replying
Heads of State Budget Offices	11	10	91%
Heads of central administration for university systems	23	8	35%
Presidents of Public Liberal Arts Colleges	64	23	36%
Presidents of Technical Schools	45	3	7%
Heads of National Associations	26	10	38%
State Higher Education Boards	11	6	55%
TOTAL	180	60	33%

The overriding reason for this analysis centers on the widespread, but varied, application of student-faculty ratios as a contributing factor in determining the faculty budgeting requirements of public (and private) institutions of higher education. Of particular concern at this time is the appropriateness of using student-faculty ratio data for budgeting purposes in a period of stabilized, and in the near future, declining enrollments. Accordingly, the second purpose of the study was to identify alternatives to use of the student-faculty ratio in the Budget process.

The use of student-faculty ratios in budgeting for the State University of New York was also studied to determine the methods and policies followed. The study showed that during the past six budget cycles, the recommended State University student-faculty ratio has overall shown a tendency to increase, or become

leaner, with the exception of Fiscal Year 1973-74 and 1974-75, as the following chart indicates:

TABLE II

Institutions	1969-1970	1970-1971	1971-1972	1972-1973	1973-1974	1974-1975	1975-1976
University Centers *	13.5	14.4	14.7	15.8	15.6	15.8	16.1
Health Sciences	3.8	4.1	4.8	5.2	5.6	5.3	5.2
Arts and Sciences	14.5	15.3	16.1	16.9	16.8	16.9	17.3
Contract Colleges	14.8	14.8	14.8	15.3	14.3	14.3	14.3
Specialized Colleges	12.7	13.3	12.7	14.7	13.8	13.4	13.5
Ag. and Technical	15.1	17.3	17.7	18.7	18.5	18.6	18.7
Overall	13.2	14.1	14.6	15.5	15.3	15.3	15.8

A detailed examination of the student-faculty ratios for the different institution groups reveals that some ratios have declined while others have increased. Certain changes have resulted from the use of revised methods for computing the student-faculty ratios, while others represent actual changes resulting from the reallocation of resources. For example:

- The decreased ratio for the Specialized Colleges results from the funding required to support the new College of Optometry and enrichment at the Forestry College.

- The decreased ratio for the Contract College reflects technical changes in the way the ratio was computed.

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* Excludes Health Science

A survey of the available literature revealed that the most comprehensive source of recent data on actual student-faculty ratios was a study conducted by Frances M. Gross of the University of Tennessee in 1973 to identify various formulas used in higher education budgeting, compare the formulas, and determine whether they met general standards of acceptability. The study used data obtained from officials of "statewide coordinated or controlling agencies for higher education or in institutions of higher education." The student-faculty ratios used in this study were those actually used by the eleven states to determine the number of full-time equivalent faculty positions required. Pertinent data from that study are included in the following two tables:

- Table III - Ranking of Student-Faculty Ratios by Level of Instruction in Seventeen State Systems.

- Table IV - Student-Faculty Ratios Reported for Eleven States.

TABLE III
RANKING OF STUDENT-FACULTY RATIOS BY
LEVEL OF INSTRUCTION IN SEVENTEEN STATE SYSTEMS

LOWER DIVISION	SFR
Washington (high cost)	12
Minnesota (high cost)	12
South Carolina	14
Ohio	16
Minnesota (low cost)	20
Nevada	20
Virginia	20
Washington (low cost)	20
California State Colleges	23
West Virginia	23
Texas	24
North Dakota	25
Florida	26
Mississippi	26
Oklahoma (colleges)	28
Oklahoma (universities)	28
South Dakota	32
University of California	34
Average	23.70

UPPER DIVISION	SFR
Washington (high cost)	7
Minnesota	10
Washington (low cost)	11
Virginia	12
South Carolina	14
Ohio	16
Minnesota (low cost)	16
North Dakota	17
Mississippi	18
Florida	19
Nevada	20
Oklahoma (colleges)	20
Oklahoma (universities)	20
California State Colleges	20
West Virginia	20
University of California	23
Texas	24
South Dakota	32
Average	18.76

MASTERS & PROFESSIONAL	
Minnesota (high cost)	6
Washington (low cost)	7
Washington (high cost)	7
Mississippi	8
Oklahoma (universities)	8
California State Colleges	9
South Carolina	9
Ohio	10
Virginia	10
North Dakota	12
Oklahoma (colleges)	12
Texas	13
Minnesota (low cost)	13
University of California	14
West Virginia	15
Florida	19
Nevada	20
South Dakota	24
Average	12.70

DOCTORAL	
University of California	4
South Carolina	4
Texas	5
Washington (low cost)	5
Washington (high cost)	5
Minnesota (high cost)	6
Mississippi	8
Florida	8
Ohio	8
Oklahoma (universities)	8
Virginia	8
California State Colleges	9
North Dakota	12
Oklahoma colleges	12
Minnesota (low cost)	13
West Virginia	15
Nevada	20
South Dakota	24
Average	10.24

TABLE IV
RANKING OF STUDENT FACULTY RATIOS BY OVERALL AVERAGE

State	Overall Average	Lower Division	Upper Division	Masters of Professional	Doctoral
Washington 1/ (high cost)	7.5	12	7	7	5
Minnesota (high cost)	8.50	12	10	6	6
South Carolina	10.25	14	14	9	4
Washington (low cost)	10.75	20	11	7	5
Ohio	12.50	16	16	10	8
Virginia	12.50	20	12	10	8
Mississippi	15	26	18	8	8
Minnesota (low cost)	15.50	20	16	13	13
Oklahoma (universities)	16	28	20	8	8
North Dakota	16.50	25	17	12	12
Oklahoma (colleges)	18	28	20	12	12
West Virginia	18.25	23	20	15	15
Nevada	20	20	20	20	20
South Dakota	28	32	32	24	24

1/ Some states differentiate between campuses which, because of geographic location (e.g., urban vs. rural) or type of instructional program (e.g., hard science vs. liberal arts) have significant cost differences.

The results of our questionnaire sent to other states showed that among educators and budget officials, there is little agreement on the optimal, or even a satisfactory, method to objectively determine faculty budgeting requirements. Part of the problem rests with the inherent difficulty of articulating the quantitative or qualitative achievements to which educational institutions aspire and the resources necessary to reach these goals. Debate over this issue necessarily hinges on the many purposes served by such institutions which, particularly in the instance of publicly supported schools, are never fully reconciled.

In the absence of universally accepted conventions regarding their budgeting techniques, many public colleges and universities across the county have developed various measures of productivity. Such measures include the numbers and/or costs of student and teacher contact hours, costs of generating student credit hours, costs of degrees conferred, and institutional costs per student by campus, discipline and academic level, among others. One additional approach that is widely used -- although sometimes for different purposes -- is student-faculty ratio (SFR).

The SFR relates, in a general way, the dollar resources committed to a given workload (students) and in this sense can be viewed as a limited but legititmate yardstick for evaluating the quality of an educational institution. Conceptually, the idea of a SFR is easy to grasp. It is merely a ratio between input and workload, hopefully measured according to some common denominator. Simplicity disappears, however, in trying to apply the concept in a concrete way, or to use it as a measure of performance or to compare its various interpretations among those who use it.

Findings

1. Various types of cost accounting information on faculty activities other than teaching, as well as information on special requirements for classroom teaching, were commonly mentioned as appropriate information to supplement use of student-faculty ratios.

   A wide range of additional measures were suggested to augment student-faculty ratio information used in budgetary determinations. These included:

   - Computation of student credit hours, costs by level and functional distribution of costs; credit hour production cost by discipline, academic program, class size, and average cost; average cost/FTE faculty; degree cost/student; faculty student contact hours; and department "profitability."

   - Information related to faculty activities other than teaching such as research, public service, extension and continuing education courses was mentioned.

   - Supplementary information related to classroom teaching was also mentioned: equipment needs, special space needs, unique class organization, instructor qualifications, use of training aids.

   - Institutional overhead costs and administrative costs were frequently mentioned.

Other types of supplementary information included:

- Presidents of technical schools mentioned supplemental information on the character of the school, such as the urban or rural location, the scope and mission of the college, and the maturity and capability of the faculty. Other supplementary information included accreditation requirements and summation of learing experiences provided the students.

- State boards of higher education mentioned including information on student aid amounts, assessment of the success graduates have in the employment market, institutional plans, mission and scope statements, and range of class sizes.

- Presidents of liberal arts colleges mentioned analysis of the proper view of shifting student demand and changes in society.

2. Cost accounting systems (as described by NCHEMS), program budgeting or combinations of both were preferred most frequently as alternatives to the use of student-faculty ratios.

The most frequently mentioned alternatives to the student-faculty ratio were oriented toward either program budgeting or cost accounting, or combinations of the two budgeting techniques which might be required to cope with rising costs. In summary, alternatives included, among others:

- State boards of higher education suggested the use of productivity measures such as number of degrees awarded or the average time needed to earn a degree.

- Presidents of liberal arts colleges expressed some interest in productivity and qualitative faculty workload analysis measures.

- Presidents of technical schools listed variations on student faculty ratios involving the use of student credit hours such as student credit hours/ full time equivalent faculty, as well as measuring the success of students in their careers.

- State University system central administrators mentioned the use of productivity measures to determine the added value to society of college programs as well as measuring research and public service activity.

- State budget officials mentioned techniques concerned with resource distribution, such as resources or faculty-student credit hours earned, and budgeting faculty positions on the basis of shifting student demand.

3. Only budget officials had a majority indicating that quality could be reliably and easily measured.

Budget officials were the only group with a substantial number replying that the quality of an education program could be measured; and only two states indicated that they were actively trying to develop acceptable means of measuring quality.

TABLE V

MEASURES OF QUALITY SUGGESTED

Group	Possible Yes	No	Suggested Measures
Liberal Arts Colleges	2	14	Quality of student at entrance Percent going to graduate or
State Boards	1	5	Program measures
Educational Groups		2	
Budget Officials	3	3	NCHEMS products; California and Pennsylvania are actively trying
Technical Schools		5	Follow graduates
Central Administration	1	8	Salary level of graduates as alumni with 10 years or more seniority

4. <u>All groups had a majority of replies stating that University productivity could be measured but there is no consensus on how or what should be measured</u>.

All groups had a majority of replies stating that measurement of productivity was possible, with numerous measures given. Many of the suggested measures were based upon student credit hours or the degrees granted.

TABLE VI

MEASURES OF PRODUCTIVITY SUGGESTED

Group	Possible Yes	Possible No	Suggested Measures
State University Central Administration	6	5	Student credit hours (3); faculty activity analysis and distribution of effort by program procedures; WICHE; compare with similar institutions.
Presidents of Technical Schools	2	1	Follow graduates; Michigan system; employer and alumni reports.
State Budget Officials	7	1	Number of degrees granted (5); student credit hours (2); student credit hours/faculty member; student faculty ratio (2); instructional cost/student by campus; tudent level, discipline.
National Educational Groups	2	1	Degrees granted; mean time to degree.
State Board of Higher Education	5	1	Student credit hours; NCHEMS "Statewide Measures Inventory:; semester credit hours; degrees earned; job placements; patents.
Presidents of Liberal Arts Colleges	7	8	Student credit hours (3); degrees awarded; student majors graduated; student credit hour production/ cost by discipline, academic program; student faculty contact hours; number of students with degrees placed in degree related field or working in field requiring a degree.

The last two findings point up a dilemma confronting higher education management. Clearly, those active in the field find it easier to measure the quantity rather than the quality of what they are producing. The survey shows that the dilemma is compounded in a period of decreasing resources and inflation, when management decisions on the allocation of resources become more critical, but rational and systematic means to distribute resources remain limited.

5. <u>The most frequently mentioned short and long range problem facing higher education was the lack of effective management techniques, followed by problems caused by inflation and declining enrollments</u>.

The responses to questions on the long and short range major challenges and problems facing higher education budgeting tended to be the same with only the frequency changing for specific problems and challenges. Interestingly, when asked about long range challenges and problems, presidents of liberal arts colleges tended to reply more frequently with answers that showed a confusion over their role and mission.

On both a short and long range basis, responses by state boards of higher education, state university system central administrators and presidents of liberal arts

colleges, defined as major problems a lack of basic management techniques to: measure productivity, set program priorities, determine program quality and costs, maintain flexibility of programs, set objectives and define goals. These management problems, they point out, must also be viewed within the context of another frequently mentioned problem, inflation, and in some cases, declining funding.

One theme recurring in the responses was the concern about a decline in quality resulting from either a lowering of standards to attract and retain students or an inability to fund new, experimental programs with a concurrent stagnation of established programs.

Other problems and challenges noted included:

- State budget officials mentioned collective bargaining agreements not funded by the Legislature; uncertainty of Federal support; determining the portion of higher education costs students should pay, and the quality and productivity of graduate programs.

- National education groups mentioned the shift in student demand to more expensive occupational/professional instructional programs.

- Presidents of technical schools listed modernizing technology for instruction and research, long range planning and radical changes in state leadership.

- Presidents of liberal arts colleges mentioned negotiated faculty contracts that increase costs while reducing management flexibility, and meeting the need for education without being used for non-educational purposes such as social change.

- State university system central administrators listed improving student access to higher education, inflexibility in reallocating resources due to tenure, and balancing the dual objectives of encouraging effectiveness, efficiency and accountability, and faculty creativity, student choice and institutional distinctiveness.

- State boards of higher education listed development of student aid models, growing involvement of the Legislature in budgeting process, inelastic increases in student fees and policy decisions made on the basis of quantitative criteria rather than traditional qualitative criteria.